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CHANGES IN PUPILS' GRADE POINT AVERAGES BETWEEN JUNIOR AND SENIOR HIGH SCHOOL AS RELATED TO CERTAIN PERSONAL AND ENVIRONMENTAL CHARACTERISTICS.

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THIS PROJECT STUDIED THE PERSONAL AND ENVIRONMENTAL FACTORS OF STUDENTS WHOSE GRADE POINT AVERAGES (GPA) DEVIATED FROM A PREDICTED VALUE. THE SUBJECTS, 243 PUPILS ENTERING THE 10TH GRADE, WERE DIVIDED INTO THREE GROUPS--THOSE WHO ACHIEVED AS EXPECTED, THOSE WHO ACHIEVED BETTER THAN EXPECTED, AND THOSE WHO ACHIEVED LOWER THAN EXPECTED. THESE GROUPS WERE FORMED ON THE BASIS OF THE DEVIATION OF THE PREDICTED 10TH-GRADE GPA FROM THE ACTUAL GPA. THE THREE GROUPS WERE THEN STUDIED IN TERMS OF THE FOLLOWING VARIABLES--AGE, SEX, ETHNIC GROUP, ADULTS AT HOME AND WORK, MOBILITY, CONSISTENCY OF GRADES, GPA NINTH- AND 10TH-GRADE CONTENT SUBJECTS, AND SCORES ON SELECTED STANDARDIZED TESTS. THE FINDINGS ON 19 PERSONAL AND ENVIRONMENTAL CHARACTERISTICS WERE PRESENTED IN A COMPARISON BETWEEN THE ABOVE- AND BELOW-PREDICTION GROUPS, AS WELL AS A COMPARISON OF THESE GROUPS WITH THE GROUP WHOSE PERFORMANCE FOLLOWED PREDICTIONS. THE MOST SIGNIFICANT FACTOR WAS THAT STUDENTS IN THE BELOW-PREDICTION GROUP TENDED TO SHOW A GRADUAL DECREASE IN GRADES PRIOR TO THEIR ENTRANCE INTO HIGH SCHOOL. (SK)

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Research Practicum Class, Fall Semester, 1966
School of Education, University of the Pacific

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CHANGES IN PUPILS' GRADE POINT AVERAGES BETWEEN JUNIOR HIGH SCHOOL AND SENIOR HIGH SCHOOL AS RELATED TO CERTAIN PERSONAL AND ENVIRONMENTAL CHARACTERISTICS

Project Assignment:
Use of Information Typically Available in a School System as the Source of Data on a Meaningful Educational Problem

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A Study Made by the Members

of the Research Practicum Class

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CHAPTER I

THE PROBLEM

Experience indicates that for most students the grade point average in a higher level of school will be quite comparable to the grade point average earned in the preceding level, but that some pupils will receive definitely higher or lower grades than would have been predicted from their previous school records.

Are there personal or environmental factors shared by the students that deviate from expected grade point averages? If we could find that certain factors characterize students who fail to reach predicted scholastic achievement or who achieve at higher than expected levels, we might be able to adjust our educational programs to: (a) forestall a drop in achievement by appropriate personal and educational counselling in the preceding school level; (b) reduce articulation problems of students tending to drop in achievement by giving them immediate classroom and counselling attention in senior high school; and (c) elicit at the earlier school level or maintain through the next the higher achievement potential these students demonstrate at one or another stage of their school careers.

The Research Practicum group was interested in investigating the changes in school achievement that occur for some pupils as they move from one level of schooling to the next. California State law requires the keeping of a considerable body of information about students, but the data that might be applicable to such a study are scattered through any given pupil's cumulative record, and further isolated by filing in individual pupil folders. Authorities have commended to educators the potential fruitfulness of "data banks" which would provide easy access to a wide range of data on pupils so gathered as to be comparable from individual to individual and across periods of time. Cumulative record folders are unwieldy, and the records often lack desirable comparability. They do, however, offer a wide range of information from which data can be culled for study with the hope that some patterns of relationship will emerge, and so lead to a better understanding of pupil behavior.

Statement of the Problem

Are there personal and/or environmental characteristics, as recorded in student cumulative folders, that differentiate those students who obtain

definitely better or poorer grades in senior high school than in junior high school?

The objectives of the study included:

1. Prediction of tenth grade achievement--grade point averages--from grades received in the ninth grade
2. Classification of pupils as achieving: (a) within a predicted range, (b) above prediction, or (c) below prediction
3. Comparison of the three differentiated groups in terms of selected personal and environmental factors as recorded in the cumulative folders
4. Scrutiny of the data to discern possible interrelationships among the factors that might profitably be followed up with more reliable data than cumulative records afford

Definition of Terms

Solids. Content subjects such as English, science, social studies, and mathematics.

Other subjects. Non-content subjects such as physical education, music, industrial, and vocational and practical arts.

Within prediction. Those pupils whose grade point average in the tenth grade solids was within one standard error of estimate from that predicted by their grade point average in the ninth grade.

Above prediction. Those pupils whose grade point average in the tenth grade solids was above one standard error of estimate from that predicted by their grade point average in the ninth grade.

Below prediction. Those pupils whose grade point average in the tenth grade solids was below one standard error of estimate from that predicted by their grade point average in the ninth grade.

CHAPTER II

REVIEW OF THE LITERATURE

School population has been growing and is continuing to grow at such a pace that sheer numbers tend to overwhelm the personalizing of services to individual students. The Department of Health, Education, and Welfare has projected an enrollment in full-time public and non-public elementary and secondary schools of 63,156,000 pupils by 1974-75 and of 72,087,000 pupils by 1979-80 (5). Extrapolations indicate a continuing gain of more than a million elementary and secondary pupils per year. Coincident with this rapid growth in enrollment is the increasing need for a technically trained labor force and decreasing unskilled employment opportunities.

Since "the highly educated man has become the central resource of today's society,"[1] and since it is widely acknowledged that we must be an educated society to progress or even to survive, it is imperative that American educational effort increase its effectiveness in developing and utilizing the intellectual resources of the nation. From the student's point of view, lack of realization of his potential narrows his personal development and limits the range of job opportunities (28). Of the young men in the top thirty per cent of the nation's ability distribution, the group frequently cited as being qualified for college work, less than half or about forty-five per cent now graduate from college. The fifty-five per cent who do not graduate from college includes: two-fifths who enter but do not finish, two-fifths who complete high school only, and one-fifth who do not even graduate from high school (32).

The data for girls are even more discouraging with regard to the number that fail to achieve the education for which they have the potential. Wiles has indicated that approximately one-half of all fifth graders will not finish high school and less than two out of three ninth-graders will finish high school (31).

Much of the recent literature on student transfer from one educational level to another has focused on the senior high school to junior

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[1] Peter F. Drucker, Landmarks of Tomorrow (Harpers: 1959), pp.114-125

college transition (3), (6), (25). A search of the literature reveals few studies related to academic achievement of students as they transfer from junior high school to senior high school.

Recently attention has turned to the relationship of social and personal factors to academic achievement. Among the variables cited as positively related to academic success are: age (20), sex (26), ethnicity (23), consistency of grades (6), religious preference (4), and academic performance (22).

Travers found correlations of intelligence and grades ran between .50 and .75 at eighth and tenth grade levels. Also, at the junior high level prediction of academic success has been made from tests such as the Differential Aptitude Test, with correlations found between numerical scores and mathematic marks (29). Although previous comparative studies of the "intelligence" of Negro and White samples showed the Negro students made lower marks on test scores, a recent study by Boney indicated that these depressed scores of Negro students were, however, equally valid as predictors of scholastic achievement (2).

Lavin (15) has shown in a review of research relative to intellective factors that the best predictions of overall grade-point average are obtained from multiple correlations in which a battery of intellective variable measures is used. Studies using a global ability measure to predict overall school performance obtain somewhat lower correlations. In both types of studies the single best predictor of performance on the college level is the high school academic record.

The traditional criteria of academic performance has been the student's grades. One authority defines overachievement and underachievement as "discrepancies between observed grades and predicted grades. In this case, the predicted grade is a value computed from a regression equation between aptitude and obtained grades."[2]

Ross concluded from his research that "The correlations between the grade school record and high school achievement are sufficiently high to

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[2]David E. Lavin, The Prediction of Academic Performance (Russell Sage Foundation, 1965) p. 28

be significant, being in most cases higher than the corresponding correlations between standard test scores and high school achievement."[3]

The literature offers some explanations for a change in academic achievement by students after transfer. When it is assumed that the transfer per se has little or no effect on the student, a change after transfer implies a change in evaluative procedures, that is, grading standards by which academic achievement is evaluated. The student's level of performance remains the same, but his recorded achievement may go up or down as a function of the evaluating process. If, however, changes in graded performance are not attributed to differences between the institutions, it would be assumed that differences are related to the characteristics of the individual. A third position is that observed changes in academic performance are a function of both institution and individual (16).

An interesting study was undertaken to determine whether the drop in grades which is reported to occur as students move from elementary school to junior high school could be related to intelligence, academic motivation, aspirations, or other student characteristics. Sixth grade teachers predicted which students would do less well in junior high school. Results of the study indicated the characteristics which cause students to drop in performance in junior high school are present at least as early as the later years of elementary school (8).

Academic underachievement is not a temporary phenomenon but rather is chronic in nature. Much of the literature stresses the need for early identification, but indicates that very little deliberate effort is directed toward such identification. The work that is being carried on is chiefly at the high school level (26). Lavin states that insufficient research has been done on the graduate and elementary levels so findings on these levels are less definitive (15).

Because of the increasingly large numbers of pupils it is very desirable to determine a rapid, effective manner of identifying predictive variables for those students deviating from expected performance upon transfer from junior high school to senior high school. One consideration toward rapid determination would be the use of that information available in the pupil's school records.

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[3]Clay Campbell Ross, The Relation Between Grade School Record and High School Achievement (New York, Teachers College, Columbia University 1925), p.69

CHAPTER III

PROCEDURE

The study population of pupils at the transition between junior and senior high school was chosen so as to include a maximum of test information and a minimum of error due to differential grading between schools. In order to satisfy the first criterion, it was necessary to use the records of students who would now be thirteenth graders because more recent classes did not have complete test records due to changes in the California State testing program. The second criterion was satisfied by limiting the study to students going from Fremont Junior High to Franklin Senior High School. The cumulative record and test information was obtained from the central office of the Stockton Unified School District.

Since the study was concerned with searching for available information which relates to changes in grade point average (GPA) at the transition from junior high to senior high, the first problem was to determine the students who achieved about as expected, those whose grades were better and those whose grades were poorer. These three groups were determined in the following manner.

First, the correlation coefficient between tenth grade total year solids and ninth grade total year solids was determined. From the regression line of the correlation, a grade point average could be predicted for the Tenth Grade from that received in the Ninth. The groups were determined by subtracting the actual tenth grade GPA from the Predicted GPA and dividing by the standard error of estimate. For convenience only, this was changed to a T score (Mean = 50, Standard Deviation = 10) and the groups were defined as follows: Within prediction 40 - 60, Above prediction >60, Below prediction <40. One-hundred-eighty were within prediction, thirty-two were above, and thirty-one were below.

With this accomplished, it was possible to start looking for other variables which related to the changes. The variables listed below were considered.

1. Age
2. Sex
3. Ethnic group membership
4. Adults in home
5. Adults working

6. Mobility Index--Elementary (Defined as the average number of home-school moves made per year during elementary school. A comparable index for Junior High was originally included as a variable, but was dropped because almost no school changes were found during junior high years.)
7. Consistency of grades (Elementary and junior high grades surveyed and subjectively rated as showing: (1) an abrupt change higher, (2) a gradual change higher, (3) consistent performance, (4) a gradual change lower, (5) an abrupt change lower.)
8. GPA ninth grade--Other (Any subjects taken other than solids)
9. GPA tenth grade--First semester solids
10. GPA tenth grade--Total year other grades
11. School and College Ability Tests (SCAT) Verbal
12. SCAT Numerical
13. Sequential Tests of Educational Progress (STEP) Reading Comprehension
14. STEP Mathematics
15. STEP English
16. Differential Aptitude Tests (DAT) Numerical
17. DAT Verbal

Due to the exploratory nature of the study, it is not possible to generalize the results to other populations. ~~In order to make replication of the study possible, so that others in the field may extend its application, a step by step outline of procedure is given in Appendix One, page ---.~~ The reader may wish to explore the results found significant in the study as well as some not found significant as indicators, and should by no means limit himself to the variables included in this study.

CHAPTER IV

RESULTS

Nineteen characteristics commonly recorded in student cumulative folders were examined in this study. Two of these, the grade point average (GPA) for solid subjects for the total year in Grades Nine and Ten, were the basis for the differentiation of the population into three groups defined as achieving within, above or below prediction in the Tenth Grade as determined by their Ninth Grade scholastic records.

The scatter diagram of Ninth Grade GPA's for solid courses and the comparable Tenth Grade GPA's indicated a linear relationship. The statistics computed from the two distributions and the correlation table are given below.

Means	Gr. 9 (X) = 1.87
	Gr.10 (Y) = 1.83
Standard Deviations	Gr. 9 = 0.81
	Gr.10 = 0.78
Pearson product-moment correlation coefficient	r = .70
Regression equation	Y' = .674X + .57
Standard error of estimate	$S_{y.x}$ = .56

As Ninth Graders the pupils later differentiating themselves as achieving above, within, or below prediction were very much alike if the mean GPA each group received the last year of junior high school is used as the criterion.

Total Group	2.0 (straight "C" average)
Above Prediction	1.9
Within Prediction	2.0
Below Prediction	1.9

This likeness of the Above and Below Prediction groups to the Within Prediction and the total population in mean GPA is somewhat surprising. Grade point averages constitute a closed scale, the highest possible being 4.00 for a straight "A" student, and 0.00 for one who fails all subjects. The regression-to-the-mean effect of the regression equation makes it impossible or highly improbable for any pupil with very low or very high grades to fall into the Below Prediction group, and relatively easy for a pupil with high grades in junior high school to become an Above Prediction

member as their tenth year grades can be relatively low and still be more than one standard error of estimate above the predicted grade. Although the mean GPA's were very similar, the range found within each of the subgroups did show the restrictive effect of the statistics employed on the membership of the Below Prediction group. The range of GPA's earned in Grade Nine by the pupils in each of the three groups was:

Above Prediction . . . . . 0.00 to 4.00
Within Prediction . . . . . 0.00 to 4.00
Below Prediction . . . . . 0.86 to 3.00

The remaining seventeen personal and environmental characteristics were studied for possible relationships to the differentiated Above and Below Prediction groups as they compared to each other and to the Within Prediction group. Some of the items--age, other GPA's, mobility, and test information--were in terms of continuous scale values. With these characteristics the statistical technique used was based on a study of the cumulative frequencies of the three distributions.[4] The point or interval of the scale at which the greatest differences occurred between the prediction groups was determined, and the size of this difference was adjudged as to significance.

Other items allowed only classification into discrete categories. These included sex, racial-ethnic membership, adults in the home, adults working, and consistency of grades. A much greater proportion of pupils falling in a given category for one of the prediction groups but not for the other groups suggested a possible significant discriminatory characteristic in these cases.

Descriptive rather than statistical terms have been used in discussing probable levels of significance in this report. The single-school situation, the somewhat atypical population of that school, and the small number of cases in the extreme Above and Below Prediction groups have already been noted as limiting factors in the study. However, the major factor in the decision to forego statistical measures of significance was the known serious unreliability of cumulative record information in some of the characteristics studied. Family information is frequently very out-of-date.

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[4]Sidney Siegel, Nonparametric Statistics (McGraw-Hill: 1956), pp. 127-136

SCHOLASTIC RECORDS

Consistency of Grades

When a pupil's records for elementary and junior high school were surveyed, teachers' judgments of scholastic achievement did appear quite consistent as previous research studies had reported. There were a few dramatic abrupt changes up or down, with consistency at the new level following. Most pupils showed a long-range pattern of very like grades. Some, however, showed slow year-to-year improvement of grades, and some gradual deterioration in achievement.

	Gradually Higher	Consistent	Gradually Lower
Above Prediction	13%	87%	0%
Within Prediction	4%	87%	8%
Below Prediction	0%	38%	59%

The differences between the Above and Below Prediction groups in the gradually higher and gradually lower categories were not significant. The heavy concentration of both in the "Consistent" range would confirm the general findings of high agreement from grade level to grade level of pupils' scholastic attainments--or teacher judgment thereof.

The very different pattern for the Below Prediction group is quite probably significant. More than half of these pupils had shown a downward trend in grades throughout their school careers.

Grade Point Averages in Subjects Other than Solids

The critical GPA in the non-solid subjects, (that point in the scale where the groups were furthest apart in cumulative frequencies), was much lower in Grade Ten than in Grade Nine. It occurred at a grade average of "B" in Grade Nine, but at the low "C" level in Grade Ten.

Grade Nine	"B" Grade or below (GPA of 3.2 or below)	Comparable % Occurred in Grade 10 at:
Above Prediction	57%	"B" (as in Gr. 9)
Within Prediction	73%	"B" (as in Gr. 9)
Below Prediction	84%	High "C"/Low "B"

Grade Ten	Low "C" Grade or below (GPA of 1.8 or below)	Comparable % Occurred in Grade 9 at:
Above Prediction	17%	"C"
Within Prediction	27%	"C"
Below Prediction	55%	High "C"

In Grade Nine all groups received grades in non-solid subjects that averaged above "C". The Below Prediction group dropped to a low "C" average in Grade Ten.

The difference between the Below Prediction and the Above group was great enough at Grade Nine (27 points) to suggest significance, but neither of these groups was significantly different from the Within Prediction pupils.

At Grade Ten the concentration of Below Prediction pupils in the below "C" range of scores did appear to differentiate them from both comparison groups.

Grade Point Average in Solid Subjects, First Semester, Grade Ten

If the previous history of deteriorating grades did not alert the schools to possible scholastic difficulties in senior high school, the first semester grade report would. Three-fourths of all Below Prediction pupils were receiving grades averaging no higher than a high "D".

	High "D" GPA or below (GPA of 1.4 or below)
Above Prediction	3%
Within Prediction	24%
Below Prediction	77%

The discriminatory power of the first semester GPA for Above Prediction compared to Within Prediction pupils was not as evident at this point in the scale as it was in the "C" through "B" intervals of the distribution. However, the Below Prediction distribution on this measure showed differences with the two other groups at this high "D" level which were very probably significant.

TEST INFORMATION

Aptitude Measures

Tests of scholastic aptitude, verbal and numerical, were given the class-group studied for this project in both junior and senior high schools--the Differential Aptitude Tests in Grade Nine, and the School and College Aptitude Test in Grade Ten. The most critical score for discriminating between the groups differed slightly from one measure to another. For purposes of comparison, cumulative frequencies at the same stanine value are reported for each of the measures in the tables below. Where the differ-

ences were even greater than the Stanine 4 interval,[5] which is the reported level, the true most critical score is indicated.

Verbal Aptitude: School and College Ability Tests

	Stanine 4
Above Prediction	42%
Within Prediction	49%
Below Prediction	78%

Verbal Aptitude: Differential Aptitude Tests

	Stanine 4	Stanine 5 True Critical Score
Above Prediction	48%	62%
Within Prediction	56%	69%
Below Prediction	77%	96%

Numerical Aptitude: School and College Ability Tests

	Stanine 4	Stanine 4/5 True Critical Score
Above Prediction	48%	32%
Within Prediction	48%	41%
Below Prediction	84%	72%

Numerical Aptitude: Differential Aptitude Tests

	Stanine 4
Above Prediction	21%
Within Prediction.	38%
Below Prediction	81%

The measures of scholastic aptitude all showed differences great enough to be considered probably significant between the Above and Below Prediction groups. The Above and Within groups were not significantly different, but the Below Prediction group did approach significance when compared to the Within group at the most-critical difference interval.

Achievement Measures

The cumulative frequency distributions for the subject matter fields tested gave quite similar patterns. The 3 prediction groups were most highly differentiated at some score-interval from low average to average. The

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[5] Scores were reported in half-stanines, with the mid-points of the scores either:
a. at the mid-point of the normal stanine interval, or
b. at the point dividing one stanine from the next.
For example, Stanine 5 - Mean $\pm$ 0.125s instead of Mean $\pm$ 0.25s
Stanine 5/6 - Mean + 0.125s to + 0.375s

second largest differences all occurred at the stanine 4/5 interval. This is the first column of reported frequencies in the following tables to give a comparable base for all tests. (All achievement measures are Sequential Tests of Educational Progress, Level 2.)

Reading	Stanine 4/5	Stanine 3/4 True Critical Score
Above Prediction	42%	22%
Within Prediction	51%	36%
Below Prediction	77%	68%

Mathematics	Stanine 4/5	Stanine 3/4 True Critical Score
Above Prediction	45%	32%
Within Prediction	57%	36%
Below Prediction	80%	68%

English	Stanine 4/5	Stanine 5 True Critical Score
Above Prediction	55%	61%
Within Prediction	53%	67%
Below Prediction	81%	94%

In no case was there a significant difference between the Above and Within Prediction groups. Comparing the Below Prediction group to the Above Prediction pupils, all differences are probably significant in the most-critical interval, and also in the 4/5 comparison interval with the exception of English, in which the difference approaches significance. The "true critical scores" showed the same pattern for comparisons of Below and Within Prediction groups--probably significant for reading and mathematics, and approaching significance for English.

PERSONAL AND FAMILIAL CHARACTERISTICS

The only variable in this category that seemed to differentiate strongly between the memberships of the three prediction groups was sex, with some indication that one ethnic-group was more heavily represented among the Below Prediction pupils.

Sex

The total population included more males than females: 132 to 110, or 55% males and 45% females. However, girls outnumbered the boys 21 to 11 in the Below Prediction group.

	Males	Females	Difference Male-Female
Above Prediction	61%	39%	22%
Within Prediction	57%	43%	12%
Below Prediction	34%	66%	32%
Difference			
Above-Within	4%	4%	
Below-Within	23%*	23%*	
Above-Below	27%*	27%*	

The difference great enough to indicate significance with a high level of probability is that between percent of boys and girls in the Below Prediction group. It is double-underlined in the above table. The differences that might prove significant if a larger population were studied have been marked with an asterisk.

Ethnic Group Membership

Of the 226 clear ethnic distinctions made in the records, there were 9 Negroes, 2 Orientals, 3 Filipinos, 46 Mexicans, and 164 "Other" Whites. With such minimal samples in all but two of the categories, the use of percents tends to disguise rather than depict the distributions of the ethnic groups into the three prediction classifications.

Number of pupils in each ethnic-prediction category

	"Other" White	Mexican	Negro	Oriental	Filipino
Above Prediction	22	5	1	1	1
Within Prediction	125	30	7	1	2
Below Prediction	17	11	1	-	-

If only the two most populous ethnic-groups were considered, and the percent of each which fell within a given prediction category studied, some possibly significant differences were found. Disregarding ethnic origins, the percent of pupils in the entire population of the study who fell into each prediction classification is given for comparison.

Percent of Ethnic Group in Each Prediction Category

	"Other" White	Mexican	Total Population
Above Prediction	13%	11%	13%
Within Prediction	76%	65%	74%
Below Prediction	10%	24%	13%

The concentration of pupils of Mexican origin in the Below Prediction group strongly suggests a meaningful difference, and should be studied in a larger sampling. A possible interaction in the senior high school years between sex image and ethnic background might be hypothesized. Deteriorating scholarship may be a characteristic more commonly found among Mexican girls. The present study included far too few cases to more than suggest that research is needed on the interrelationship.

Home and Family Items

As noted earlier in the chapter, the listings of family members and adult workers in the home are often found to be out-of-date in pupil cumulative records. Two items from the folders are presented in the tables below in terms of the number of cases listed for each relationship in the three different prediction groups.

Legally Responsible Adult(s) with Whom Pupil Lived

	Above Prediction	Within Prediction	Below Prediction
Mother and Father	25	157	25
Mother	4	6	2
Father	-	4	-
Stepfather and Mother	1	7	1
Stepmother and Father	-	2	2
Guardian	1	1	2
Sibling	-	1	-
Grandparents	-	1	-
Relative--unspecified	-	1	-

Responsible Adults in Household Who Work Outside the Home

	Above Prediction	Within Prediction	Below Prediction
Father	19	120	23
Mother and Father	3	23	4
Mother	2	-	-
Stepfather	-	3	1
Stepfather and Mother	-	1	-
Guardian	-	-	1
Relative--unspecified	1	1	-
Not Given	6	32	3

The proportion was computed for every item in the family characteristics given in the above tables as they were distributed among the three prediction groups. Nothing suggesting a significant difference was found between any of the prediction groups as they were related to the home and family characteristics.

OTHER SCHOOL-RELATED MEASURES

Age-Grade Placement

For the population studied in the project, those pupils progressing normally through school would be between 15 years 9 months of age and 16 years 9 months of age as they entered Grade Ten. The first table gives the percent of pupils in each prediction group in relation to the normal age as of the first school month in Grade Ten.

	Underage	At Grade	Overage
Above Prediction	0%	77%	23%
Within Prediction	19%	64%	17%
Below Prediction	0%	59%	41%

Some of the pertinent data concerning age are obscured in the above table by the fact that no pupils in either the Above or Below Prediction groups were young for the grade while nineteen percent, or 34 pupils in the Within Prediction group were. Of these, 32 fell within the 3 month interval just under the normal progress range.

If, instead, the cumulative frequencies are analyzed, a pattern emerges that may be very significant for school practice. At least it suggests an area that deserves study in a much broader context than the present project.

	Above Prediction	Within Prediction	Below Prediction
Quarter-year (or more) below At-Grade placement	0%	19%*	0%
At-Grade placement:			
Youngest ¼-year	13%	40%	3%
Second ¼-year	32%	57%	22%
Third ¼-year	55%	75%	38%
Oldest ¼-year	77%	83%	59%
Quarter-year above At-Grade placement	90%	89%	66%

*Only 1%, or 2 pupils, more than 3 months below normal grade placement in age.

These differences may be read as indicating:

a. The absence of <u>any</u> underage pupils in either the Above or or Below Prediction groups may have significance.

b. There were definitely fewer pupils in the Above Prediction group who were in the youngest half of "At-Grade" ages than there were in the Within Prediction group.

c. This difference faded out in the older half of the normal placement ages, and disappeared within the first three months after normal age range.

d. The differences between the Below and Within Prediction groups continued fairly large throughout the normal placement age range, and may be significant for the first quarter-year above "At-Grade".

e. The Above and Below Prediction pupils appeared alike in being somewhat older than the Within Prediction group through the first half of the "At-Grade" range. From there on the Above and Below groups begin to pull apart, and there may well be a significant difference between them for the proportion of pupils who are more than three months overage for the grade.

School Mobility Index

Elementary school-of-attendance records were available for 191 of the 243 pupils in the study. An index on school mobility was computed for them by dividing the number of changes in school-of-attendance by the number of years on record.

Some pupils attended only one school throughout the elementary grades, a mobility index of 0.00. Four pupils averaged one change per year (index 1.00), and one pupil had an even higher index of 1.17 or seven moves in six years.

Perhaps the most mobile pupils were the 52 pupils for whom no elementary records were available. A study in depth might uncover significant information missed in the present project, for there is research data in the literature to indicate that changes of school can be a serious handicap to scholastic achievement.

The "critical-difference" in the cumulative percent distributions occurred in the mobility index interval of 0.36 to 0.41, or two changes within five recorded years of elementary school attendance.

	Index 0.36 to 0.41
Above Prediction	88%
Within Prediction	80%
Below Prediction	68%

The differences between the Below Prediction group as compared to the Within and Above groups were not great enough to do more than suggest possible significance. For instance: one out of three Below Prediction pupils had indices greater than 0.41, and one out of five Within Prediction and one out of eight Above Prediction pupils exceeded this index.

The study, the results of which have been reported in this chapter, has been defined as exploratory and descriptive in nature. The results, therefore, should be considered as presenting clues found through analysis of certain cumulative record information that may be worthy of further and deeper investigation. Relationships between certain personal-environmental characteristics and patterns of scholastic (grade-getting) performance were indicated in several comparisons that were made. More complex interrelationships may well exist.

CHAPTER V

SUMMARY AND CONCLUSIONS

It can be concluded that most pupils who will achieve below prediction at Franklin High School can be identified before leaving junior high, or at least within the first semester of senior high. The most significant factor to note about the pupils who were in the Below Prediction group is that their grades gradually went down in the school years before entering Franklin High School. The lower-than-expected grades in senior high were, then, a continuation of this trend and to some extent an acceleration of it. If, in addition, some or all of the other factors found significant in the study are present, schools can expect further academic deterioration unless positive steps are taken to reverse the trend. These may be summarized as follows:

Grade Point Average clues to decreasing achievement included:

First semester, 10th grade solids:	1.39 or below
Total year, 10th grade solids:	1.30 or below

Test Results of significance included:
(Given in terms of stanine scores)

School and College Ability Tests: Verbal	3 or below
School and College Ability Tests: Numerical	4 or below
Sequential Tests of Educational Progress: Mathematics	4 or below
Sequential Tests of Educational Progress: Reading	4 or below
Differential Aptitude Tests: Numerical, Verbal	4 or below

Personal characteristics more often found among those in the Below Prediction group included:

Overageness for grade

Sex--Girls more frequently than boys

Ethnic group--Mexican-American heavily represented

Suggestions for Further Research

There are several factors that preclude generalizing from the present study to other samples of pupils. Not all pupils in the study had complete records in the cumulative folders so that for several items the number of cases was small. Of the 243 pupils in the population studied, only 32 fell into the Below Prediction group as it was defined, and 31 into the Above Prediction group.

The pupils came from a special socio-economic class, the low income families living in the Franklin High School area. Ethnic group membership was recorded for only 226 of the 243 pupils. The nationality-race breakdown differed from that in many such economically disadvantaged areas, the "Other White" classification accounting for 73% of the known cases, with 20% Mexican-American, and 4% Negro.

No hypotheses were drawn to be disproved or verified. Rather, the material was collected on available items, data typically present in school district records, and a descriptive study was made of a particular year's entering class at Franklin High School.

The following questions suggest a few areas for study that might be of value in extending the usefulness of the present research.

1. Do the grades received for the first report period in senior high school, (information not available for the present study), provide reliable confirmation of a serious downward trend in a pupil's scholastic achievement?
2. Is there a better pattern of items for predicting more accurately which pupils will achieve below prediction in schools serving low socio-economic areas?
3. Does the same pattern of items identify pupils who will achieve below prediction at other high schools which have pupils from a similar socio-economic background?
4. Are there cumulative record items and patterns of items which will identify pupils who will achieve below prediction in high schools serving pupils from other socio-economic backgrounds or with other ethnic groupings?

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